

execute instructions for performing any of the digital processing operations described above. System **2200** may further include a graphics interface that communicates with optional graphics subsystem **2204**, which may include a display controller, a graphics processor, and/or a display device. Processor **2201** may communicate with memory **2203**, which in one embodiment can be implemented via multiple memory devices to provide for a given amount of system memory. System **2200** may further include 10 devices such as devices **2205-1508**, including network interface device(s) **2205**, optional input device(s) **2206**, and other optional **10** device(s) **2207**. Network interface device **2205** may include a wireless transceiver and/or a network interface card (NIC). The wireless transceiver may be a WiFi transceiver, an infrared transceiver, or a Bluetooth transceiver (e.g. used to communicate with the in-ear speaker.) Input device(s) **2206** may include a mouse, a touch pad, a touch sensitive screen (which may be integrated with display device **2204**), a pointer device such as a stylus, and/or a keyboard (e.g., physical keyboard or a virtual keyboard displayed as part of a touch sensitive screen). IO devices **2207** may include an audio device. An audio device may include a speaker and/or a microphone to facilitate voice-enabled functions, such as voice recognition, digital recording, telephony functions and for producing test sounds. Other IO devices **2207** may include universal serial bus (USB) port(s), sensor(s) (e.g., a motion sensor such as an accelerometer, gyroscope, a magnetometer, a light sensor, compass, a proximity sensor, etc.), or a combination thereof. Devices **2207** may further include an imaging processing subsystem (e.g., a camera), which may include an optical sensor, such as a charged coupled device (CCD) or a complementary metal-oxide semiconductor (CMOS) optical sensor, utilized to facilitate camera functions. Certain sensors may be coupled to interconnect **2210** via a sensor hub (not shown), while other devices such as a keyboard or thermal sensor may be controlled by an embedded controller (not shown), dependent upon the specific configuration or design of system **2200**.

[**0164**] Note that while system **2200** is illustrated with various components of a data processing system, it is not intended to represent any particular architecture or manner of interconnecting the components; such details may not be germane to embodiments of the present invention. It will also be appreciated that network computers, handheld computers, mobile phones, servers, and/or other data processing systems, which have fewer components or perhaps more components, may also be used with embodiments of the invention.

[**0165**] Some portions of the preceding detailed descriptions have been presented in terms of algorithms and symbolic representations of operations on data bits within a computer memory. These algorithmic descriptions and representations are the ways used by those skilled in the data processing arts to most effectively convey the substance of their work to others skilled in the art. An algorithm is here, and generally, conceived to be a self-consistent sequence of operations leading to a desired result. The operations are those requiring physical manipulations of physical quantities.

[**0166**] It should be borne in mind, however, that all of these and similar terms are to be associated with the appropriate physical quantities and are merely convenient labels applied to these quantities. Unless specifically stated other-

wise as apparent from the above discussion, it is appreciated that throughout the description, discussions utilizing terms such as those set forth in the claims below, refer to the action and processes of a computer system, or similar electronic computing device, that manipulates and transforms data represented as physical (electronic) quantities within the computer system's registers and memories into other data similarly represented as physical quantities within the computer system memories or registers or other such information storage, transmission or display devices.

[**0167**] Embodiments of the invention also relate to an apparatus for performing the operations herein. Such a computer program is stored in a non-transitory computer readable medium. A machine-readable medium includes any mechanism for storing information in a form readable by a machine (e.g., a computer). For example, a machine-readable (e.g., computer-readable) medium includes a machine (e.g., a computer) readable storage medium (e.g., read only memory ("ROM"), random access memory ("RAM"), magnetic disk storage media, optical storage media, flash memory devices).

[**0168**] The processes or methods depicted in the preceding figures may be performed by logic or logic circuitry (also referred to as processing logic) that comprises hardware (e.g. circuitry, dedicated logic, etc.), software (e.g., stored or embodied on a non-transitory computer readable medium), or a combination of both. Although the processes or methods are described above in terms of some sequential operations, it should be appreciated that some of the operations described may be performed in a different order. Moreover, some operations may be performed in parallel rather than sequentially.

[**0169**] In the foregoing specification, embodiments of the invention have been described with reference to specific exemplary embodiments thereof. It will be evident that various modifications may be made thereto without departing from the broader spirit and scope of the invention as set forth in the following claims. Also, it is to be appreciated that each of the devices, components, or objects illustrated in FIGS. **1-23** are not necessarily drawn to scale and that the sizes of these components are not necessarily identical. For example, the coil assembly **414** illustrated in FIG. **8** may or may not be identical in size and/or shape to the coil assembly **514** illustrated in FIG. **8**.

[**0170**] The specification and drawings are, accordingly, to be regarded in an illustrative sense rather than a restrictive sense.

What is claimed is:

**1.** An insertable in-ear speaker configured as a hybrid transparency system, the insertable in-ear speaker comprising:

a user content sound system to receive a user content audio signal, being a recorded audio program signal or a downlink audio signal of a phone call, and convert the user content audio signal into sound for delivery into an ear canal that is sealed by the in-ear speaker;

an ambient sound augmentation system having an external microphone which is configured to pick up sound in the ambient environment of the in-ear speaker, as a microphone output ambient content audio signal, wherein the system can be configured to be i) activated to process the microphone output ambient content audio signal to increase gains of a plurality of frequency components therein, respectively, by amounts